

For Nick Hirt

APR 12 1979

- copy for J.R.L.

AN ENGINEERED WATERPROOFING SYSTEM

for the

ROOF TOP PARKING AREA

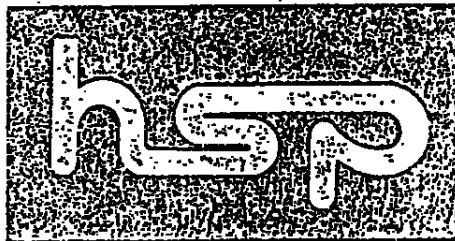
of

ELLIOTT LAKE COMMERCIAL CENTER

ELLIOTT LAKE, ONTARIO

JAMES E. KEYMAN

ARCHITECT



HARRY S. PETERSON CO. SEALANT ENGINEERS

4150 S. Lapeer Road Pontiac, Michigan 48057 (313) 373-8100

PREPARED BY

DAVE MONROE

APRIL, 1979

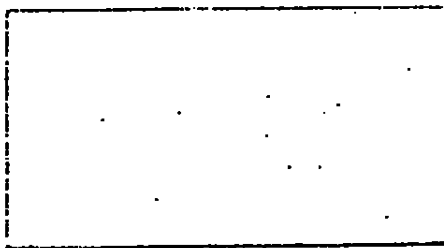
Pontiac, Michigan

Chicago, Illinois

Windsor, Ontario

AGC_P000011968

HARRY S. PETERSON CO., INC.



SEALANT ENGINEERS

4150 South Lapeer Road, Pontiac, MI 48057

ELLIOTT LAKE COMMERCIAL CENTER WATERPROOFING SYSTEM

A comprehensive waterproofing system for a roof top parking area must provide the following design elements to provide satisfactory service in place:

- 1) Watertightness.
- 2) A durable traffic bearing wearing surface.
- 3) Satisfactory insulation properties.
- 4) Ease of maintenance in the event of trouble.
- 5) Single source, responsibility for design, and installation of a satisfactory integrated system.

The purpose of this proposal is to develop the most economical system that will satisfy the criteria outlined above.

WATERTIGHTNESS

A completely watertight system must provide protection from leakage from a variety of sources. One method of accomplishing this is to provide a membrane over the entire structural slab, and cover with an independent wearing slab. Potential problems exist with this method due to loss of adhesion, reflective cracking, and wear from frictional forces from the wearing slab above due to traffic and/or thermal movements.

The success of a membrane system, in our experience, has been directly related to the control and expansion joint systems as well as the protection sheets selected to be used in conjunction with the membrane system provided. The choice of the membrane material is secondary to these other design criteria.

On the other hand the segmental nature of the precast structural system present in this case allows us to create a strip membrane system in conjunction with a composite concrete topping and crack control system which

CONTINUED . . .

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will serve the function of a complete membrane system. The advantages of this approach would be:

- a) Greater structural capacities due to the presence of a composite wearing coarse.
- b) Ease of maintenance because all areas are exposed to inspection without slab removal.
- c) Less initial expense and lower maintenance, again because of no need to remove topping slabs to make repairs.

To successfully implement a system that does not include a complete membrane the success of the crack control provisions and the durability of the concrete wearing coarse become critical. Consider these elements separately:

- a) Crack Control: The cracking patterns of toppings over precast structural members are predictable to us and can be controlled with 99+% accuracy by tooling joints in the concrete topping over the ends of the hollow core slabs and every third grout key in the longitudinal direction. Careful sealing of these joints with Iso-Flex Urethane Sealant will successfully control water seepage through this controlled crack pattern. Since the possibility exists that minor seepage could result from concrete spalls behind the sealant related to traffic and/or snow plows it is proposed that an Iso-Flex Urethane strip membrane be applied immediately below the crack control joints to stop any moisture from getting through the grout key in the case of a composite topping. The concrete surface, carefully cured and sealed will serve its own waterproofing function. In the event a sandwich system without composite wearing slab is selected a control joint system breaking the top slab into approximately 15 foot squares is recommended. A through joint, (topping slab expansion joint) should be provided at 30' intervals and is considered a part of this crack control system.
- b) Durable Concrete Wearing Surface: If the concrete wearing coarse is composite to the structural slab it is possible to reduce the thickness to 2 1/2" from the 4" normally required for a non-composite traffic bearing slab. 3"

While strength is an important design feature, durability is more important and requires careful attention to certain details of the mix design and placement procedures:

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Mix Design:

W/C: .45 or less min. psi - 4000 psi

Min. Cement Content: 600#

Air Content: 6% + 1%

Aggregate Size: 3/4" avg.

Hard rock, non-absorbent
aggregates (highway dept.
criteria applies).

Cure: Barrier prime coat applied
immediately after bleed water
leaves surface.

Finish: Rough swirl, drag burrap,
or medium broom to insure water
dissipating rough finish.

Finishing: Finishing the harsh mix
design above can present problems
with consolidation. The best
solution to the consolidation
problem is to place and finish
the concrete with a hydraulically
operated concrete finishing
machine.

It has been repeatedly shown in the literature that the most important variable in the prevention of surface scaling is the presence of air in the mix. More recently it has been shown by microscopic analysis that it is the distribution of the air bubble matrix and not simply the presence that leads to a durable concrete surface. For this reason over-finishing, certain admixtures, and pumping may disrupt this distribution at the surface and lead to deterioration later. Again the best protection against this occurrence is to place by bucket or buggy and finish with a bridge deck type paving machine.

CURING

Water retention during the hydration period is another important criteria in installing the system. Too rapid evaporation of moisture may result in plastic shrinkage cracking that can accelerate deterioration or result directly in leakage through the concrete wearing slab. This problem is significantly greater in a sandwich system where a non-composite slab is placed directly on bone dry insulation or protection sheet. The moisture in this case is sucked out of the bottom as well as evaporated off the top of the relatively thin slab. Fog sprays, wind breaks or other protective measures may be required with this system under certain weather conditions

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(i.e., hot, dry, windy). On the other hand this problem is rarely seen with composite slabs as the structure is soaked with water prior to placement to insure bonding. Curing with a good quality membrane cure such as Barrier Prime Coat as the bleed water disappears is normally an adequate curing method in the case of a composite slab.

SEALING

The final step in waterproofing the wearing surface is to install a penetrating sealer to seal the pores against water and salt penetration which together lead to accelerated surface deterioration under freeze-thaw conditions. Barrier B Gloss 28% solids has been extensively and successfully used throughout Canada to protect concrete surfaces against this problem. This step is recommended regardless of whether a composite or sandwich system is utilized.

EXPANSION JOINTING

Ineffectual expansion joint sealing is the most common of all waterproofing problems in parking structures. The only two systems which carry strong guarantees in North America are the Iso-Flex Premolded Urethane "T" Joint by Harry S. Peterson Company and the Elastometal Strip Joint Seal by Elastometal of Burlington, Ontario. Both systems have an experience record on major projects in Canada and have design features which make them potentially watertight. Either system should perform satisfactorily on this project although I would recommend that a secondary neoprene loop drain be installed below the primary seal in order to provide additional protection in the event of spot failure over occupied area. These loops should be drained at their terminations. The Harry S. Peterson Company proposal would include the Iso-Flex design for obvious reasons (we make it!).

INSULATION

The choice of insulation depends on the choice of system. In the event the composite slab is utilized the insulation must be suspended below the structural slab. In this case the product choice is Therma Fibre a semi rigid, foil faced, fire rated, mineral wool felt board stock insulation by U.S. Gypsum.

In the case of a sandwich slab Dow Styrofoam S.M. extruded polystyrene board stock is the choice. Each product has properties which suits it well to its role in the particular system desired. A comparison follows:

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| | <u>Styrofoam S.M.</u> | <u>Therma Fibre</u> |
|---|---------------------------------------|-----------------------|
| Material | Extruded polystyrene | Mineral Wool Felts |
| K | .18/inch | .23/inch |
| R | 5.5 /inch | 4.35/inch |
| Compressive strength for wheel loading | 30-40 p.s.i. | Does Not Apply |
| Fire Rating | Does not apply | 3 hrs. with concrete |
| Location | Above structural slab and membrane | Below structural slab |

DRAINAGE

Drainage patterns should be developed to slope to drains with falls of 1% or greater. Expansion joints should be at high points. In the case of a sandwich slab drains should be capable of receiving water between slabs as well as on top. Composite slab drains need drain only at the surface.

Drain design should include watertight hardware without weep holes or other penetrations. They should also permit watertight flashing into the structural slab or composite topping.

MAINTENANCE OF THE SYSTEM

Every parking deck system requires periodic maintenance due to exposure to traffic, weather and snowplow maintenance. A good system will minimize the expense and disruption of the required maintenance.

The worst potential problem is failure due to workmanship, product or system design failure. The most common cause of this type of failure is undue price pressure coupled with split responsibility. Every element described in this proposal plays a role in the success or failure of the whole system. Any product substitution which splits the responsibility for the entire system is ill advised.

Other performance problems exist which can be predicted as normal maintenance items. Among these:

- 1) Snowplow damage to joints and surfaces.
- 2) Uncontrolled cracking.
- 3) Deterioration of the sealer over time.
- 4) Malfunction of the drains.
- 5) Joint edge spalling.

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A five year guarantee is provided with this proposal to protect the owner against the problems described above. The guarantee is subject to certain conditions described in the standard warranty form.

A composite slab system offers strong advantages over a sandwich system in terms of potential maintenance problems. Problems in a composite slab system are observable from the top, relate directly to the area below and are maintainable without requiring slab removal. The biggest problem with a sandwich slab system is that water penetrates the top slab in one area and moves laterally to another where it leaks. The source at the top does not relate to the source below making identification difficult. Repairs sometimes require extensive removal which is not only expensive but also lengthy.

A secondary problem in a sandwich system is that the top slab behaves in a manner that is different from, and not necessarily compatible to the structural slab below. The result is that the incidence of random cracking and sealant joint failure allowing the intrusion of water between slabs is much greater than in the case of a composite slab.

SUMMARY

A complete integrated waterproofing system has been described herein for both a sandwich slab system and a composite slab system. While we are willing to provide a strong guarantee with either system, and despite the conventional wisdom that the traditional sandwich slab concept is best, we would strongly recommend the composite slab system as the best long-term solution because of the reduced number of field problems we have experienced with this approach, the ease of future maintenance and the lower initial cost. The fact of the matter is that the track record for double slabs is not good, while the composite slab approach, while fewer in number, has proved very successful.

DM:ng

PRICING

- A. Double Slab System with insulation (Sandwich Slab System) for roof top parking areas
- 1) Iso-Flex 510 hot applied rubberized asphalt membrane (125 mils).
 - 2) 1/8" Protection board.
 - 3) 3" Styrofoam S.M. Insulation R=16.6
 - 4) 4" Durable Concrete wearing slab placed and finished with hydraulically operated finishing machine with one layer 6 x 6 10/10 WWF.
 - 5) 15' x 15' Crack Control System in topping slab sealed with Iso-Flex Polyurethane Sealant. Through joints in topping placed at 30' ~~40~~ intervals.
 - 6) Topping slab to be cured with Barrier Primer.
 - 7) Topping slab to be sealed with Barrier B Gloss 28% solids 250 square feet/gallon.
 - 8) Traffic bearing Iso-Flex Premolded Urethane Expansion Joint Seals with secondary neoprene loop.
 - 9) Single source five (5) year performance guarantee against leakage or concrete surface deterioration.
 - 10) Miscellaneous sealant details required to complete the system.

Drain hardware not included in the proposal.

Engineering price estimate for the system installed \$534,000

\$4.45

DMing + \$.30/inch of additional insulation /sq ft.

ITEM ⁴ DEDUCT ~20M
To 3"
+ Cone Testing

B. Composite Slab System for roof top parking area consisting of the following components:

- 1) Iso-Flex 750 Urethane Coating strips (60 mils) over grout strips in the structural slab directly below crack control joint system in the composite topping slab.
- 2) 3" Durable Concrete wearing slab with one layer 6 x 6 10/10 WMF placed and finished with hydraulically operated finishing machine.
- 3) A Crack Control System tooled into the composite topping slab that traces the ends of all hollow core and every 3rd piece in the longitudinal direction. All joints to be sealed with Iso-Flex Polyurethane Sealant.
- 4) Composite wearing slab to be cured during placement with Barrier Primer.
- 5) 3" Foil faced, fire rated Therma Fibre mineral wool felt insulation to be suspended below the structural precast R=13.05. (hollow)
- 6) Composite topping slab to be sealed with Barrier B Gloss 28% solids 250 square feet/gallon.
- 7) Iso-Flex Premolded Urethane Expansion Joint Seals with secondary neoprene loop.
- 8) Single source five (5) year performance guarantee against leakage or concrete surface deterioration.
- 9) Miscellaneous sealant details required to complete the system.

397,600
900
5200
1,600
14,103.60
~~3,377~~
3,750.00
14,103.60
14,103.60

Drain hardware not included in the proposal.

Engineering price estimate for the system installed 397,600

5Xing + .20 / additional inch of insulation / sq ft.

Final Price for May 28/79

Parking deck, walkway waterproofing

and waterproof of roof over walkway

start date July 15th

~~\$375,000.00~~

ROTOTEK

Working to permit final price south. renegotiated May 30 final total price \$400,000

DETAILS

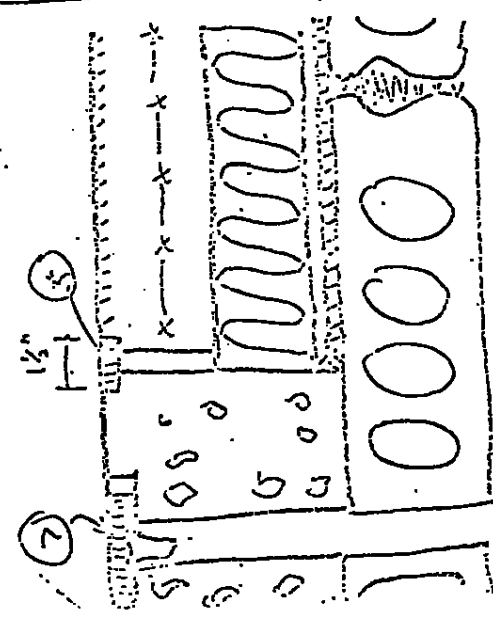
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SYSTEM 1: INSULATED DOUBLE SLAB SYSTEM -- "SANDWICH SLAB"

CONDITION @

STRUCTURAL EXPANSION

JOINTS

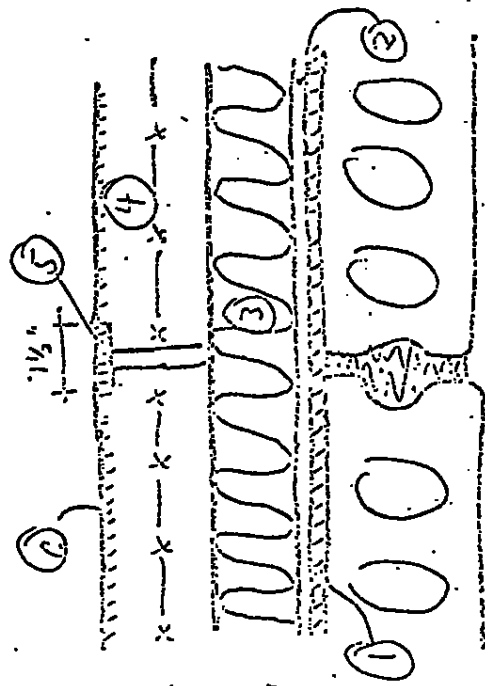


CONDITION @

TOPPING EXPANSION JT

~ 30' Intervals

both directions

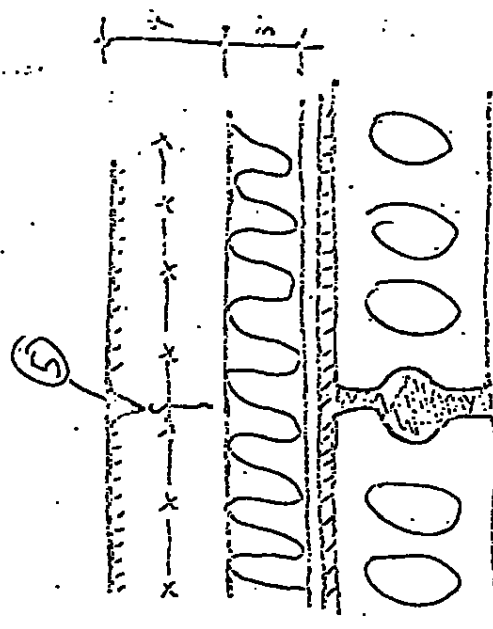


CONDITION @

INTERMEDIATE CONTROL JTs.

~ 15' Intervals

both directions

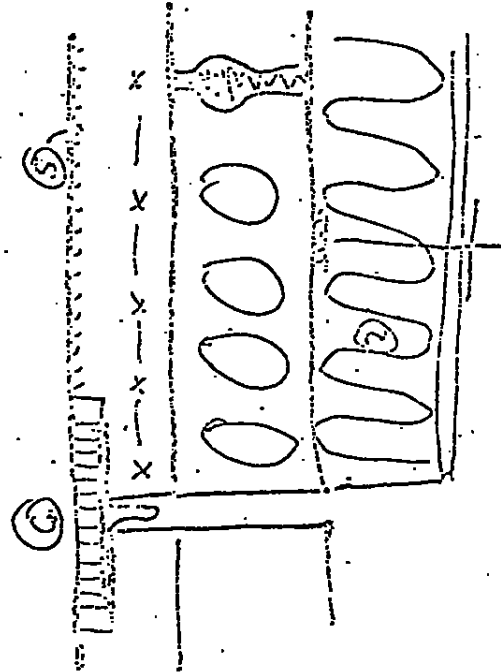


COMPONENTS OF SYSTEM SHOWN:

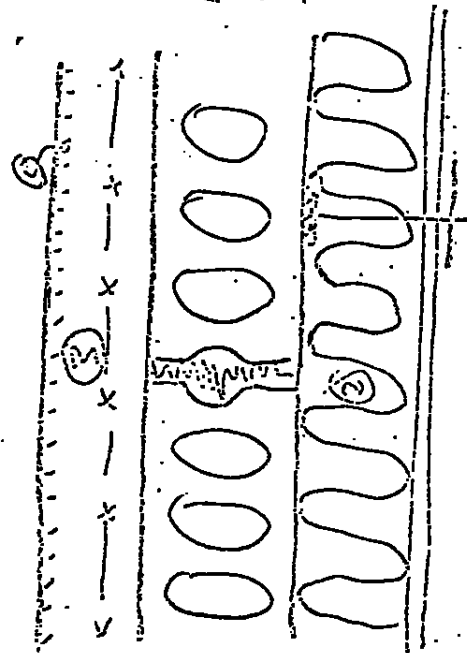
- 1.) ISO FLEX 510 Hot Applied rubberized impervious membrane (125 mils)
- 2.) 1/8" PROTECTION BD.
- 3.) 3" STYROFOAM S.D. INSULATION
- 4.) POLYURETHANE CONCRETE W/STYROFOAM SANDWICH
- 5.) ISO FLEX SEALANT IN CRACK CONTROL SYSTEM
- 6.) BARRIER PENETRATING CONCRETE SEALER
- 7.) ISO FLEX PREMOULD EXPANSION JTs SEAL WITH LOOP

SYSTEM 2: COMPOSITE TOPPING SLAB

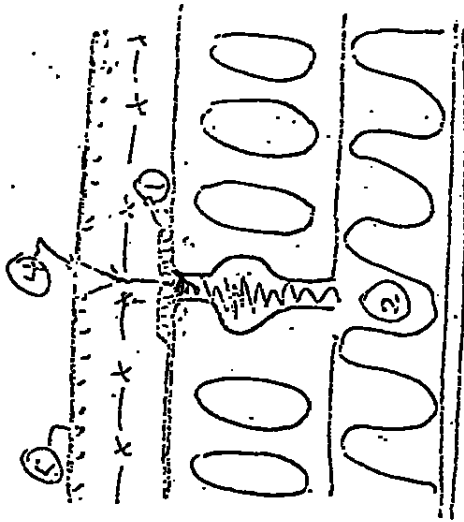
CONCRETE @ STRUCTURAL
EXPANSION JOINTS



CONCRETE @
INTERMEDIATE GROUT KEYS



CONCRETE @ EVERY
THIRD GROUT STRIP,
SIMILAR @ Hollow
CORE ENDS

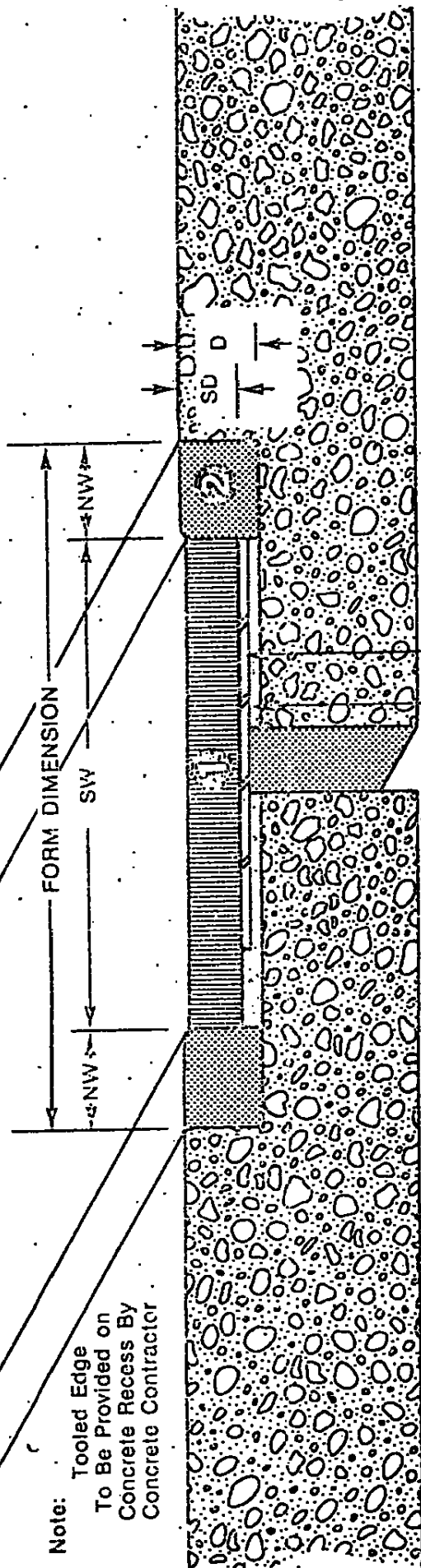


COMPONENTS OF SYSTEM SHOWN:

- 1) Iso Flex 750 Urethane Concrete Strip 60 mils.
- 2) Thermal-Flex Insulation 3" White Polyurethane
- 3) ~~2 1/2~~ 3" Durable Concrete Composite Wavable Slab
- 4) Iso Flex sealant in crack control system
- 5) Barrier Penetrating concrete sealer
- 6) Iso Flex pre-molded expansion joint seal

MATERIALS.

Note: Toolled Edge
To Be Provided on
Concrete Recess By
Concrete Contractor



1. ISO-FLEX 880 POLYURETHANE SEAL
2. ISO-FLEX POLYMERIC TRAFFIC NOSING
3. BOND BREAKER & TRAFFIC SUPPORT PLATE
4. ISO-FLEX BEDDING COMPOUND

DESIGN/SUBMITTAL INFORMATION

Job Name: _____

Location: _____

Dimensions: _____

Blockout dimensions: _____

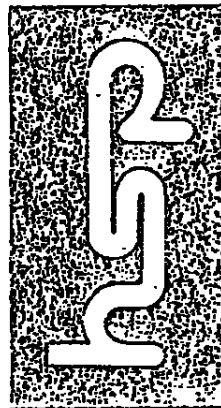
Seal Size (SW x SD): _____

Nosing Size (NW x D): _____

Plate Size & Type: _____

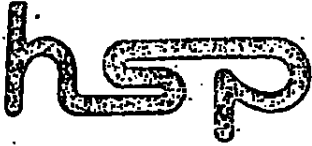
Stem Opening (S): _____

Expected Annual Movement: _____ Date: _____



HARRY S. PETERSON CO., INC.
SEALANT ENGINEERS
4150 S. Lapeer Rd.
Pontiac, Michigan 48057
(313) 373-8100

ISO-Flex Expansion Joint Seal With Polymeric Nosings



Iso-Flex
ELASTOMERS

SPECIFICATION DATA

1. PRODUCT NAME

Iso-Flex 880.

Two component polyurethane, traffic-bearing expansion joint seal.

2. MANUFACTURER

Harry S. Peterson Company, Inc.
4150 South Lapeer Road
Pontiac, Michigan 48057
Phone: (313) 373-8100

3. PRODUCT DESCRIPTION

Basic Use: Iso-Flex 880 is a two component polyurethane elastomer which is applied in a wide band of elastomer free to absorb relatively large amounts of movement in expansion joints.

Because of its superior tear and abrasion resistance, Iso-Flex 880 will resist heel and wheel traffic, regardless of the width of the joint.

In the Iso-Flex expansion joint seal, the width of the sealant is increased until yearly movement is about 20% of the sealant width assuring long-range performance. A ledge is provided under the sealant for support and a bond breaker is provided on this ledge so that the entire band of elastomer is free to absorb movement.

The Iso-Flex expansion joint seal offers both economic and practical advantages over all available alternatives. Not only is the joint usually less expensive than alternative solutions, but the advantages include:

- Positive adhesion and more water-tight installation.
- Neat, flush surface with no rattle or "thump" under traffic and no accumulation of debris in the joint.
- More controllable design limits.

Limitations: Successful installation of the Iso-Flex expansion joint seal is subject to many application variables. Because of the critical nature of the installation, the Iso-Flex 880 expansion joint seal is marketed only on an installed basis by the Harry S. Peterson Company, Inc.

4. TECHNICAL DATA

Hardness: Shore A Durometer 30 Avg.

Water Immersion: Samples of Iso-Flex 880 between masonry blocks will withstand water immersion while elongated 25%. (Federal Spec. TT-S-00227E - Paragraph 4.3.9.4.1.)).

Thickness of Sealant: The thickness of the sealant should normally be between 1/2" and 5/8". Lesser thicknesses will reduce the support capabilities of the sealant over the joint and greater thickness may reduce the allowable movement.

Design Data: The first step in designing an Iso-Flex "T" Joint is to determine the expected annual movement in tension to which the joint sealant will be subjected. To determine the width of the joints, the following factors must be considered:

- Annual temperature variation — A minimum of 100 degrees F. is usually assumed for heavy, reinforced structures. Lighter one-story structures or structures having exposed steel will usually exhibit even greater annual temperature changes and movement.
- Joint Spacing — (The average amount of structure distance on each side of the Joint.)
- Additional movement due to shrinkage or creep of concrete, particularly in post tensioned structures.
- Possible impact loading.

Composition and Materials:
Iso-Flex 880 is a two-component polyurethane material which cures to a tough elastomer.

Color: Gray.

Applicable Standards: Iso-Flex 880 will meet and exceed the performance requirements of Federal Specification TT-S-00227E, Class A, Type 1 (Sealing Compounds, Two-Component, Elastomeric).

5. INSTALLATION

Installation of the system is provided by the manufacturer in accordance with procedures developed and recommended by The Harry S. Peterson Co., Inc. Technical assistance during design and construction is a part of the TRG program and is available from the manufacturer. The joints to receive the seal are normally provided by others in accordance with recommendations of the Harry S. Peterson Co., Inc.

6. AVAILABILITY AND COST

Availability: Iso-Flex 880 is the product designation for Iso-Flex polyurethane elastomers used in the Expansion Joint Systems marketed by the Harry S. Peterson Company, Inc. on an installed basis only. These materials are not available for sale on any other basis.

Cost: Iso-Flex Expansion Joint Systems are competitive in costs with other types of expansion jointing systems such as compression seals, sliding plates and preformed rubber traffic joint systems.

7. GUARANTEES

The Harry S. Peterson Company, Inc. has developed the Total Responsibility Guarantee Program (TRG) in response to the need for meaningful performance guarantees in the market place. Under this program the Harry S. Peterson Company will provide written warranties that joint systems provided under the TRG Program will not leak due to design, material or application deficiencies for periods up to 5 years. Conditions of the guarantee are spelled out on the Standard Warranty form.

8. MAINTENANCE

In the event of damage, Iso-Flex 880 may be spot-patched in the field using approved methods.

9. TECHNICAL SERVICES

Complete technical information, and literature are available from the Harry S. Peterson Company, Inc. Additional information, case histories, and technical assistance can be obtained by calling the Harry S. Peterson Company, Inc., or one of its branch offices. Call 313-373-8100.

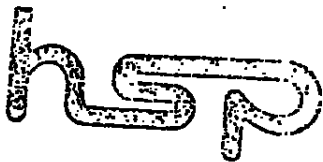
Harry S. Peterson Co., Inc.

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CAULKING & SEALANTS
elastomers, two component bulk

AGC_P000011983



SPECIFICATION DATA

Iso-Flex
ELASTOMERS

1. PRODUCT NAME

Iso-Flex 750. Two-part polyurethane, cold applied, liquid, chemically cured elastomeric deck coating.

2. MANUFACTURER

Harry S. Peterson Co., Inc.
4150 S. Lapeer Road
Pontiac, Michigan 48057
Phone: (313) 373-8100

3. PRODUCT DESCRIPTION

Iso-Flex 750 is a cold applied urethane coating designed for use under both foot and wheel traffic. The system consists of a prime coat, a base coat and a non skid top coat for foot and wheel traffic conditions.

Basic Uses: Iso-Flex 750 is designed to provide a monolithic flexible waterproof coating continuously bonded to concrete, masonry, plywood or other sound, non asphaltic, substrate. Typical applications would be for mechanical room floors, roof decks, plazas, tunnels, parking structures, water holding tanks, recreation decks, walkways, tank tops and other surfaces where waterproof coated surfaces are desirable.

ADVANTAGES

The Iso-Flex coating system is impervious to water penetration, remains permanently flexible, develops a continuous bond to most substrates and may be left exposed to foot and rubber wheel traffic. These inherent properties of the material give the system many performance and application advantages:

Performance advantages: (1) The system develops a continuous bond when applied to most substrates. (2) The system is impervious to water penetration. Water cannot get through it or under it. (3) The coating never hardens and remains flexible to temperatures as low as -30°F. (4) The coating system requires no additional protection when left exposed to pedestrian and wheel traffic.

Limitations: The Iso-Flex coating system is designed for application in relatively thin mil thicknesses. This feature requires that the substrate to which the product is applied be relatively smooth and level.

The Iso-Flex coating system develops a chemical bond to the substrates to which it is applied. Curing agents, mold releases, sealers, etc., may interfere with good adhesion. Therefore, surfaces to receive the product should be free of these and other potential contaminants. Concrete slabs should be water cured to insure best results.

4. PHYSICAL CHARACTERISTICS

| Property | Test | Base Coat | Top Coat |
|-----------------------|---------------------------------|--------------|--------------|
| Weight | — | 10 lbs/gal | 8.0 lbs/gal |
| Hardness (Shore A) | ASTM D-2240 | 40-60 | 60-80 |
| Viscosity | Brookfield RVF No. 5 at 20 RPM | 10-30,000cps | 1-3,000cps |
| Tack Free Time | TT-S-00227E | 6-8 hrs. | 6-8 hrs. |
| Tensile | ASTM D-412 | 400 psi | 700 psi |
| Elongation | ASTM D-412 | 250% | 100% |
| Tear Resistance | ASTM D-624 | 150 psi | 250 psi |
| Abrasion Resistance | Tabor 1000 rev., 1000g. | 0.030g. loss | 0.010g. loss |
| Peel Adhesion | TT-S-00227E | 25 psi | 60 psi |
| Weathering Resistance | 2000 hrs. Atlas Weather-o-meter | no chalking | no chalking |
| Flame Resistance | UL 790 | pass | pass |

The Iso-Flex coating system has a service temperature range of -30° to +180°F.

Application must be to surfaces that are dry at temperatures above 40°F.

5. INSTALLATION

Surfaces to receive Iso-Flex 750 must be smooth, clean, relatively non-porous, non asphaltic, dry and free of voids. Water curing of surfaces to receive the coating insures best results. Surfaces which have received curing compounds, sealers, oil stains or other contaminants may require sandblasting or acid etching. Adhesion checks prior to general application are advised with subsequent preparation performed in accordance with manufacturers recommendations.

Joints or cracks which exceed 1/32" should be pretreated prior to general application. Detailing work, such as expansion jointing, crack repair, flashings, etc., should be accomplished in accordance with manufacturers instructions prior to general application.

All surfaces to receive the coating must be given a primer coat after all detailing work has been completed. Coverage of the primer will vary depending on the porosity and smoothness of the substrate. Thickness is not important but the entire surface should be visually covered and puddling should be avoided.

The base coat should be mixed and applied in accordance with manufacturers instructions before the primer has dried. The coverage of the

of the base coat is dictated by the service condition. A 30-40 mil coverage (40 sq. ft. per gallon) is recommended for most traffic conditions.

A 20 mil top coat with non skid aggregates is recommended for wheel and pedestrian traffic conditions. The non skid aggregates may be mixed into the top coat and applied with a roller. 20 or 30 grit silica, silica carbide or quartz are recommended as aggregates.

6. COST

The cost of the system is competitive with other coating systems of comparable quality and intended usage. Installed prices vary greatly with intended service conditions. Prices are developed on an individual job basis.

7. GUARANTEE

Performance guarantees are available under the Harry S. Peterson Company's Total Responsibility Guarantee Program (TRG).

8. MAINTENANCE

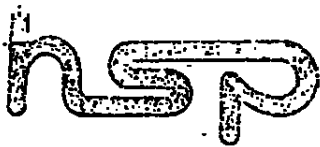
Iso-Flex 750 may be repaired in the field using methods approved by the Manufacturer.

9. TECHNICAL SERVICES

Complete technical information is available throughout North America from the Harry S. Peterson Company. Additional information and assistance may be obtained by calling (313) 373-8100.

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Liquid waterproofing

AGC_P000011984



Iso-Flex
ELASTOMERS

SPECIFICATION DATA

1. PRODUCT NAME

Iso-Flex 510 Hot Applied Rubberized Asphalt Membrane.

2. MANUFACTURER

Harry S. Peterson Co., Inc.
4150 S. Lapeer Road
Pontiac, Michigan 48057
Phone: (313) 373-8100

3. PRODUCT DESCRIPTION

The Iso-Flex 510 flexible membrane system is a hot, rubberized asphalt compound, applied in a continuous single layer. Surface conditioners and related Iso-Flex products are used in conjunction with the membrane as expansion joint, flashing, control joints, and related treatments to provide a complete membrane system.

Basic Use: The purpose of the membrane system is to provide a thick, monolithic, tenacious, flexible waterproof membrane continuously bonded to concrete, masonry, asphaltic material or other sound substrate. Iso-Flex 510 can be used to waterproof horizontal and vertical surfaces in such applications as plazas, roofs, promenades, podiums, tunnels, bridge decks, ramps, parking structures, elevated roadways and to line reservoir structures.

Advantages: Iso-Flex 510 is impervious to water penetration, remains permanently flexible, is relatively inexpensive and develops a continuous bond to most substrates. The membrane is self-leveling and will re-seal if mechanically damaged and will re-adhere to most sound substrates. Because of the relative thickness of the application, Iso-Flex 510 may be applied to irregular surfaces which are too rough or too porous to receive other membrane systems.

Limitations: The surface of the system is not intended to be permanently exposed except when submerged under water.

4. PHYSICAL CHARACTERISTICS

| Properties | Result | Test Method |
|---------------------------|------------------|------------------|
| Color | Black | — |
| Flash Point | Over 500° F | COC |
| Penetration | 140-160 @ 77° F | ASTM D-5 |
| Water Vapor Permeability | 0.01 PERMS | ASTM E-96 |
| Water Resistance | No Change | ASTM D-1167-64 |
| Heat Aging (Weight Loss) | Less than 1% | 4 Weeks — 180° F |
| Application Temperature | 300-400° F | |
| Service Temperature Range | -30° F to 180° F | |

5. INSTALLATION

Installation of the Iso-Flex 510 membrane shall be by the manufacturer or an applicator approved by the Harry S. Peterson Company.

All detailing work should be completed in accordance with manufacturers' instructions prior to application of the membrane. Detailing would include related flashing, jointing, etc. Cracks in excess of 1/16" should be treated in accordance with manufacturers' instructions prior to general application of the membrane.

The surface should be sound, clean, and free of contaminants such as oil before application. A surface conditioner is applied in accordance with manufacturer's recommendations prior to general application.

The membrane material is supplied in 50 lb. cakes, melted in an oil bath kettle and applied hot at the rate of approximately 1 lb./sq. ft. (1/8 - 3/16" thickness).

The surface of the membrane is dusted after application to remove tackiness. The use of protection layers should be in accordance with manufacturer's recommendations and is dependent upon the type of overlayment intended and the general conditions of the project.

The membrane should not be left exposed for extended periods.

6. AVAILABILITY AND COST

Iso-Flex products are marketed throughout North America on an installed basis through the Harry S. Peterson Company's Total Responsibility Guarantee program and through a system of authorized applicators. Costs are competitive with similar products and other systems designed to perform the same function. Costs are developed on an individual job basis by contacting the Harry S. Peterson Company directly.

7. GUARANTEES

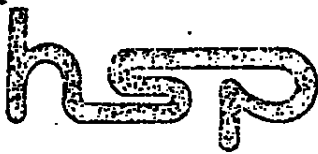
Under the Harry S. Peterson Company's Total Responsibility Guarantee Program (TRG) the Harry S. Peterson Company assumes contractual responsibility for design, materials and installation of the waterproofing system. Single source performance guarantees of up to five years are available under this program.

8. MAINTENANCE

The Iso-Flex 510 hot-applied membrane system is virtually maintenance-free when properly installed. Spot patching may be accomplished in accordance with manufacturer's recommendations in the event damage occurs.

9. TECHNICAL SERVICE

Complete technical information and literature are available from the manufacturer by calling (313) 373-8100.



SPECIFICATION DATA

1. PRODUCT NAME

Iso-Flex 880 Series

Iso-Flex 880 GB (Self-Leveling) & Iso-Flex 881 GB (Non-Sag). Two-part polyurethane sealants.

Color: Gray & Black.

2. MANUFACTURER

Harry S. Peterson Co.
4150 S. Lapeer Rd.
Pontiac, Michigan 48057

3. PRODUCT DESCRIPTION

Basic Use: Iso-Flex 880 GB & 881 GB are the product designations for the two-part urethane sealants prescribed for the engineered joint systems installed under the Harry S. Peterson Company's Total Responsibility Guarantee Program (TRG). Typical Applications include control & expansion joint systems for parking structures, stadiums, plazas, water and sewage treatment facilities and other types of concrete construction. Iso-Flex 880 & 881 are similar products used for expansion jointing systems.

Iso-Flex two-part urethane sealants cure rapidly to a tough elastomer having exceptional resistance to wheel and foot traffic. A relatively fast cure rate allows usage in joints which may be moving during cure and minimizes the protection required.

Iso-Flex sealants have been designed for use under extended water immersion.

Iso-Flex 880 GB & 881 GB polyurethane sealants contain no solvents, plasticizers, or asphalt additives and are among the most dimensionally stable sealants available. Field experience since 1960 and 4000 hours of accelerated weathering in the weatherometer show that Iso-Flex polyurethane sealants will suffer no distortion or degradation under continued movement of wheel or heel traffic.

Limitations: Iso-Flex 880 GB & 881 GB are unsurpassed in toughness and durability and should be used in all critical installations and whenever wheel traffic is involved. Performance of these sealants is closely related to preparation, application techniques and structural behavior. Iso-Flex 880 GB & 881 GB are only available through The Harry S. Peterson Company's TRG program which closely controls the installation conditions.

Composition and Materials: Iso-Flex 880 GB & 881 GB are two-component polyurethane sealants of a chemically curing type containing no asphalt, coal tar or plasticizers. Iso-Flex 880 GB & 881 GB are packaged in standard 1 gallon, 1 3/4 gallon and 4 gallon units.

Shelf Stability: 24 months minimum.

Applicable Standards: Iso-Flex 880 GB & 881 GB will meet and exceed the requirements of Interim Federal Specification TT-S-00227-E, Sealants Class A, Type 1 & 2, self-leveling & non-sag sealants.

4. TECHNICAL DATA

LABORATORY DATA:

Shore A Hardness

Iso-Flex 880 GB - 30 Avg.

Iso-Flex 881 GB - 30 Avg.

Water Immersion: Samples of Iso-Flex 880 GB & 881 GB between masonry blocks will withstand water immersion while elongated 25% (Fed. Spec. TT-S-00227E) (Page 7, footnote 10, paragraph 4.3.9.4.1).

Weight Loss After Heat Aging: When tested according to paragraph 4.3.5 of Federal Spec. TT-S-00227E, Iso-Flex 880 GB & 881 GB will show weight losses of under 4% as compared to the allowable 10% under the specification.

Recovery: Iso-Flex 880 GB & 881 GB have a minimum of 90% recovery after blocking in place under tension for 10 days.

DESIGN DATA:

An integral part of the TRG program is reviewing of joint detailing prior to bid on an individual job basis by qualified personnel of the Harry S. Peterson Company. This service is essential to good sealant performance in critical applications. The Harry S. Peterson Company also provides field consultation to insure proper configuration and location of joints during construction under the TRG program.

5. INSTALLATION

Preparatory Work: Thorough surface preparation to insure a dry, clean, sound joint edge is essential to a good horizontal joint sealant application. Joint edges should have a tooled radius wherever possible. Joints should be cleaned either by hand or wire brushing, power wire brushing, sand-blast-

ing, acid etching, or grinding the edge to assure a clean, sound substrate.

Sealant should not be applied directly over cork or fiberboard fillers, which usually are damp and not tight in the joints. These fillers should be cut out deep enough to allow insertion of proper size filler to obtain tight back-up and bond breaker. Use only non-absorbent foam fillers such as Neoprene, Ethafoam, Minicel, Butyl or P.V.C.

Methods: All joints must be carefully and thoroughly primed, using prescribed primers.

Sealant is mixed and applied to the joint with a caulking gun, keeping sealant approximately 1/16" low in the joint.

Sealants will have work life and cure times dependent on temperatures.

Precautions: Joints should be protected from water immersion (due to rain or snow) during initial cure.

Iso-Flex sealants should not be installed over damp or wet fillers or mortar.

6. AVAILABILITY AND COST

The Iso-Flex 880 GB Series are only available on an installed basis under The Harry S. Peterson Company TRG program. A limited number of authorized applicators and The Harry S. Peterson Company can provide installed prices on an individual project basis. Iso-Flex 880 GB & 881 GB are not available for general sale.

7. GUARANTEES

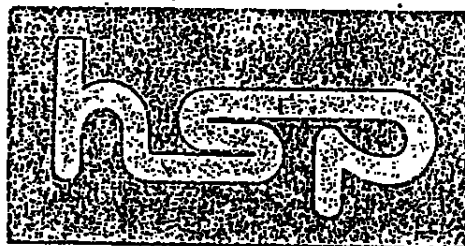
Under the TRG program The Harry S. Peterson Company, or one of its authorized applicators, will provide a performance guarantee of up to five years that no leakage will occur as a result of failure of the joint system subject to the conditions of the Total Responsibility Guarantee program.

8. MAINTENANCE

In the event of damage to sealant in the joints, proven procedures are available for repairing and re-bonding Iso-Flex to the existing sealant.

9. TECHNICAL SERVICES

Complete technical information and literature are available from The Harry S. Peterson Company by calling 1-313-373-8100.



Standard Warranty

DESCRIPTION

Project: _____ Contractor or Job #: _____

Owner: _____, Dated: _____

Architect: _____ Engineer: _____

Description of Work Performed: _____

Location of Project: _____

Date of Completion of Sealant Work: _____ Warranty Expires: _____

Authorized Installer: _____

HARRY S. PETERSON CO. SEALANT ENGINEERS

COVERAGE:

During the warranty period, the Harry S. Peterson Company and the above-named authorized installer, jointly and severally, will make, or cause to be made, any repairs necessary to correct leaks or other defects in workmanship in the above described work, resulting directly from the following causes:

- 1) Deterioration of materials supplied resulting from usual and ordinary effects of wear and weather.
- 2) Errors or mistakes in workmanship by the installer.
- 3) Any cohesive or adhesive failure of material resulting from faulty workmanship or defective material.

EXCLUSIONS:

Leaks or consequential damage resulting from any one of a combination of the following causes are expressly excluded from this warranty:

- A. Natural catastrophes including but not limited to floods, earthquakes, tornadoes, etc.
- B. Structural failures such as shifting, settling, splitting or cracking concrete or deficiencies of adjacent materials.
- C. Cohesive or adhesive failures or other post-completion damage to the subject work caused by man, including but not limited to such actions, as vandalism or the operation of snow removal or other scraping equipment.
- D. Application of, or repairs to, subject work by other than a manufacturer's authorized installer.
- E. Erection or construction of any additional installation on or through the subject work after date of completion unless installed in a manner prescribed by the Harry S. Peterson Company.

SCOPE OF WARRANTY:

Repairs of leaks or other defects covered by this warranty will be made at no cost to the owner. The obligation of Harry S. Peterson Company and its authorized installers is expressly limited to the repair and correction of such leaks and defects, until the warranty expires, and no liability for secondary damage to other materials on the job site or to the owner, his employees or invitees shall be implied or accepted by Harry S. Peterson Company or its authorized installers as a result of a leak, or defect covered by this warranty.

NOTICE BY OWNER OF COVERED LEAKAGE OR DEFECT:

If leakage or other defect covered by this warranty occurs, the owner shall promptly notify Harry S. Peterson Company, or its authorized applicator, of the nature of the leakage or other covered defect and the extent of damage and shall confirm such notification in writing. The Harry S. Peterson Company shall arrange for the inspection of the reported leakage or other defect and if covered shall proceed to the correction thereof. Should such inspection reveal that the leakage results from causes excluded from warranty Harry S. Peterson Company shall fully report such facts to the owner in writing, indicating what repair work will be required, what its charge for completing the same should be if the owner authorizes such work.

RENEWAL OF WARRANTY:

Upon request of the owner, not less than 60 days prior to the expiration of this warranty, for a renewal of said warranty for an additional period of the same duration as the initial warranty but otherwise on the same terms as herein shown, Harry S. Peterson Company will, without charge, inspect the work covered by this warranty and report in writing to the owner any and all maintenance work which Harry S. Peterson Company will require done as a prerequisite to renewal of this warranty for such additional period. If the owner desires such renewal he will at his own cost, have all such required maintenance work done by an authorized installer acceptable to Harry S. Peterson Company, and upon completion and payment for such required work, Harry S. Peterson Company will issue a renewal of this warranty for one additional period of equal length to this initial warranty.

HARRY S. PETERSON COMPANY

4150 S. Lapeer Road • Pontiac, Michigan • 1-313-373-8100

By _____
Title _____
Date _____

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